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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA-13285 (March 2003)
NASA - KSC
Superseding NASA-13285 (September 1999)

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03/03

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NASA-13285 (March 2003)
NATIONAL AERONAUTICS **NASA - KSC**
AND SPACE ADMINISTRATION **Superseding NASA-13285**
(September 1999)

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SECTION 13285

ASBESTOS ABATEMENT
03/03

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NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers the asbestos demolition, construction and abatement requirements at Kennedy Space Center (this includes NASA/KSC facilities at Cape Canaveral Air Station). This section shall be edited only by personnel certified by the State of Florida as an abatement project designer. This is designed as a local for NASA at Kennedy Space Center.

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PART 1 GENERAL

1.1 SUMMARY

This section specifies the asbestos abatement requirements and the Contractor's applicable asbestos procedures. This includes demolition or salvage of structures where asbestos is present, removal or encapsulation of materials containing asbestos, construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos, installation of products containing asbestos, asbestos spill/ emergency cleanup, transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed.

Abatement work shall be conducted in accordance with the Class I, II, III, or IV Methods of Compliance as required by 29 CFR 1926, 40 CFR 61 Subpart M, 49 CFR 171, 49 CFR 172, FAC CHAPTER 62-257, and FL-STAT 469.

1.2 REFERENCES

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NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically

be deleted from this section of the project specification.

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The publications listed below (or current updates/revisions)form a part of this section to the extent referenced:

ASTM INTERNATIONAL (ASTM)

ASTM E 1368	(1996) Standard Practice for Visual Inspection of Asbestos Abatement Projects

COMPRESSED GAS ASSOCIATION (CGA)

CGA G-7.1	(1989) Commodity Specification for Air

FLORIDA ADMINISTRATIVE CODE (FAC)

FAC CHAPTER 62-257	(1996) Asbestos Fee

FLORIDA STATUTES (FL-STAT)

FL-STAT 469	(1997) Asbestos Abatement

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 94-113	(1994; 4th Ed) NIOSH Manual of Analytical Methods

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	(1996) Occupational Safety and Health Standards
29 CFR 1926	(1996) Safety and Health Regulations for Construction
40 CFR 61	(1996) National Emission Standards for Hazardous Air Pollutants
40 CFR 763	(1996) Asbestos
49 CFR 171	(1995) General Information, Regulations, and Definitions
49 CFR 172	(1995) Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training Requirements

1.3 SUBMITTALS

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NOTE: Review submittal description (SD) definitions

in Section 01300, "Submittals", and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

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The following shall be submitted in accordance with Section 01300, "Submittals," in sufficient detail to show full compliance with the specification:

SD-01 Preconstruction Submittals

Work Schedule shall be submitted in accordance with the paragraph entitled, "Worker Protection," of this section.

SD-02 Shop Drawings

The following shall be submitted in accordance with the paragraph entitled, "Implementation Plan," of this section.

Coordination Drawings
Detail Drawings

SD-06 Test Reports

Initial Exposure Assessments in accordance with 29 CFR 1926 (2), Air Monitoring and Notification of Demolition/Renovation as part of the Implementation Plan.

Air Monitor Reports shall be submitted in accordance with paragraph entitled, "Air Monitoring," of this section.

Work site entry logs of all personnel entering and leaving the regulated work area shall be maintained by the on-site competent person indicating the date and time of entry and egress.

Daily Site Inspection Logs shall be maintained by the on-site competent person indicating the date, time and results of the work area daily site inspections.

Waste Drum Inventory of all generated waste drums or containers shall be maintained indicating the location and approximate quantity of material in each container.

The Air Monitor Report Entry Logs, Daily Site Inspection Logs and Waste Drum Inventory shall be updated daily, maintained at the work site in an accessible location for Government review and copies submitted to the Government at the end of each week of the abatement work.

SD-07 Certificates

The following certificates shall be submitted:

Asbestos Contractor's License or other Contractor license approval from the State of Florida, Department of Business and Professional Regulation (FDPR).

Training Certification, and experience of Contractor's "Competent Person", supervisor, and workers shall be submitted.

SD-08 Manufacturer's Instructions

Material Safety Data Sheets shall be submitted in accordance with the paragraph entitled, "Licenses Permits, and Notices," of this section.

Implementation Plan shall be submitted as identified in paragraph entitled, "Implementation Plan" prior to initial site set-ups or start of work.

SD-11 Closeout Submittals

Within 10 days after the completion of work, the Contractor shall submit to the Contracting Officer a written summary and copies of the following items:

Notification of Demolition/Renovation

Waste Disposal Permit and all Disposal Shipping Manifests and Tickets.

Air Monitor Reports or Independent Monitoring Data conducted during the abatement.

Calibration Records for sampling equipment taken before and after each air sample.

Entry logs and Waste Drum Inventory maintained during the abatement task.

1.4 LICENSES PERMITS, AND NOTICES

The Contractor shall have an Asbestos Contractor's License and secure all necessary licenses and permits associated with asbestos removal, transportation, and disposal as may be required by Federal, State, and local regulations. Only those Contractors who are certified and licensed by the State of Florida Department of Professional Regulation (FDPR), shall be permitted to perform asbestos abatement activities at Kennedy Space Center.

A Waste Disposal Permit and all Disposal Shipping Manifests and Tickets shall be obtained.

The following certificates shall be submitted:

Evidence of participation in a Proficiency Analytical Test (PAT) program such as or equivalent to the American Industrial Hygiene Association PAT or Asbestos Analytical Registry (AAR) accreditation certificate and Interlab QA/QC Program participation for the independent air monitoring agency selected by the Contractor before starting work.

Training Certification and accreditation certificates for the independent air monitoring agency's on-site personnel and a copy of independent air monitoring agency's Quality Control Program.

Certification documents by the Contractor verifying that employees have been provided current respirator fit test, training, and medical examinations in compliance with 29 CFR 1926.

Material safety data sheets as required for materials to be used on the specified project.

1.4.1 Notification

A written notice and any required fee's to obtain a Permit to demolish friable asbestos shall be sent to the State Asbestos Coordinator in accordance with FAC CHAPTER 62-257 by the Contractor. A copy of the notification shall be provided to the Government as part of the Implementation Plan.

1.5 IMPLEMENTATION PLAN

The Contractor shall prepare and submit a detailed, written Implementation Plan to the Government for approval, prior to the start of work, that includes the following:

Coordination drawings shall include site specific drawings of proposed work areas, clean room/change areas, mini-enclosures, shower, equipment room, waste loading/staging areas, locations of HEPA filtered negative pressure devices and exhaust points, work areas, emergency routing and areas to be modified.

Detail drawings shall be submitted for asbestos abatement systems consisting of fabrication and assembly drawings for all parts of the work in sufficient detail to enable the Government to check conformity with the requirements of the contract documents.

A copy of Notification of Demolition/Renovation.

Plan of Action, including proposed procedures to be used in complying with the requirements of this specification and 29 CFR 1926, sequence of asbestos abatement work, the interfaces of trades involved in the performance of work, posting of licenses, permits, etc., methods to be used to assure the safety of building occupants and visitors to the site, disposal plan including location of approved disposal site, a detailed description of the methods employed to control pollution and a detailed work schedule. Expand upon the method for removal of ACM, the use of

portable HEPA ventilation systems, closing out of the buildings HVAC system, method of removal to prohibit visible emissions in the work area, and packaging of removed debris.

Details of the decontamination areas and procedures, locations of staging areas, posting of warning signs, and details of negative air system to be used in the work area.

Sketch(s) or drawing(s) of complete contract area(s) showing the shower room, clean room, drum staging area, decontamination and containment areas, the negative air system, and exits. Designation of the "Competent Person", and Site Supervisor.

The Contractor shall provide a written Air Monitoring Plan to be prepared under the direction of and signed/stamped by a Certified Industrial Hygienist (C.I.H.) specifying monitoring criteria and a resulting action plan for implementation by the Competent Person. The Plan shall require the Competent Person to be on site at all times (unless otherwise authorized by the contracting officer) during hazardous abatement operations. Instructions shall require this person, independent of production pressures, to stop non-conforming operations. This procedure shall also provide for bringing in a qualified back-up person in the event that the Competent Person is absent from job site.

Evidence that the Contractor, his staff and abatement workers (including supervisors) have attended and successfully completed asbestos abatement course(s) including refresher courses as set forth in FL-STAT 469 and in accordance with 29 CFR 1926, and 40 CFR 763.

The Contractor shall provide evidence of a Respiratory Protection Program in accordance with 29 CFR 1910 including evidence of worker training in the care, use, and maintenance of respirators and fit test certification.

A description of respiratory equipment and protective clothing provided the abatement workers.

Evidence that all personnel assigned to the abatement project have been examined annually by a physician. The Contractor shall submit the physician's written opinion containing the results of the medical examination in compliance with 29 CFR 1926 for each employee who will be employed on this project.

Procedures for enforcement of Personal Hygiene Practices.

A Contingency Plan shall be prepared and included by the Contractor for emergencies including fire, accident, power failure, heating or cooling, negative air system failure, respirator supplied air system failure, or any other event that may require modification of the work area isolation procedures. Include in the plan specific procedures for decontamination or work area isolation, safe exiting and the need for medical attention in the event of an emergency.

The Contractor shall document that procedures and policies are in effect to ensure that the worker safety and environmental plans are enforced.

The Implementation Plan shall be submitted to the Government for review, revised by the Contractor where required, and resubmitted for approval. Commencement of work will not be permitted until the Implementation Plan is given final approval.

1.6 AIR MONITORING

The Contractor shall obtain the services of an independent Air Monitoring Agency accredited by the American Industrial Hygiene Association (AIHA), for analysis of airborne asbestos concentration levels. A copy of the monitoring agency's Quality Control Program shall be provided to the contracting officer prior to commencement of the abatement activities. The individual performing the on-site air monitoring shall meet the requirements as set forth in FL-STAT 469 and 40 CFR 763 and perform sample collections in accordance with the approved Air Monitoring Plan.

Pumps shall be calibrated before and after each air sample and calibration records furnished to the Government.

Air Monitor Reports listing the airborne fiber concentration in fibers/cc. At a minimum, the Air Monitor Reports shall include, the following information for each sample: Sample identification, Employee Name, Social Security Number, Sample location, Description of task being monitored, Exposure level results in (f/cc), Monitoring instrument identification number, Pre-calibration, post calibration and average flowrate of each sample, Sample date, start and stop times, Type of protective devices worn (if any), Project identification number, Facility number and name, Sampling and Analytical Methods used, Contact name and company, and name of individual performing the sampling.

Independent Monitoring Data shall be submitted.

1.6.1 Air Sample Analytical Method

Airborne fiber sampling and analytical procedures shall be by Phase Contrast Microscopy (PCM) in accordance with 29 CFR 1926 or the most current version of the NIOSH 94-113, Method 7400.

1.6.2 Air Sampling Rate, Volumes and Frequency

The Contractor shall conduct daily monitoring utilizing sample rates, volumes and frequency in accordance with 29 CFR 1926. At no time shall the minimum, number of samples or sample volumes be less than those specified below:

Type of Sample	Volume	Minimum # Samples	Location
Prior to set-up (within 24 hrs)	1200L	2	Regulated Area
Personal, During work	400L	2	Personal B.Z.
Area samples, Adjacent	1200L	2	Regulated Area

Type of Sample	Volume	Minimum # Samples	Location
to work area.			
Area samples at Negative Air Unit Exhaust.	1200L	1	In area of outlets

1.7 WORKER PROTECTION

The Contractor shall perform Initial Exposure Assessments and Employee Exposure Monitoring in accordance with 29 CFR 1926.

The Contractor's Competent Person shall conduct an exposure assessment immediately before or at the initiation of the abatement work to ascertain expected exposures during the abatement work.

The Contractor shall select and provide respiratory protection to employees and ensure they are utilized in accordance with 29 CFR 1926.

Work schedule shall be submitted indicating the work days and hours to include as a minimum the number of workers per shift. Include a bar chart to identify the individual milestones through to the completion of the project (i.e., number of days to complete work site preparation, number of days to complete ACM removal, number of days to complete final cleaning and lockdown, etc.).

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 TEMPORARY UTILITIES AND SERVICES

The Government will make available at the work site, water at hose bibs and 120 Volt AC at receptacles for the Contractor's use. Water proof safety lighting shall be provided by the Contractor where necessary for safe, adequate illumination.

All electrical equipment to be used inside the work areas should be powered from a UL approved Ground Fault Circuit Interrupter (GFCI). The Contractor shall not exceed the manufacturers limits per GFCI. The Contractor shall make all necessary connections and shall restore the site connections to their original condition or better prior to project completion.

The Contractor shall ensure all energized or pressurized systems inside the work area have been locked out, tagged out or otherwise rendered safe.

The Contractor shall provide temporary water from the existing building water source to control the generation of airborne dust, to allow for area, personnel, and equipment decontamination, and to supply decontamination unit needs. The Contractor shall provide a backflow preventer at the source.

The Contractor shall provide temporary sanitary drainage piping to the decontamination unit sump and to the shower unit at a minimum slope of 2.0 percent, and temporary drainage piping to waste water pump and existing

drain in accordance with local standards and as approved by the Contracting Officer.

3.2 WORK AREA PREPARATION

The Government will re-arrange equipment and storage areas to the extent of providing a direct and unobstructed path to the work area(s). During ACM removal, the Contractor shall confine equipment and employees to the designated work area(s).

Unless otherwise directed by the Contracting Officer, the Contractor shall establish and maintain a [25-foot] [8 meters] [_____] access control barrier zones around the designated work area(s). Interference with the functional operation of the building occupants outside these areas will not be permitted.

All building supply and return air ducts from the mechanical system shall be isolated to eliminate air flow into or out of containment area(s).

Any work area considered for asbestos removal which shows visual debris shall be interpreted as possible asbestos contamination. The designated work area shall be pre-cleaned.

3.2.1 Pre-Cleaning

The Contractor shall shut down HVAC systems and seal all critical barriers prior to initiating pre-cleaning actions. Openings including but not limited to, windows, corridors, doorways, elevator openings, skylights, ducts, grilles, diffusers, and any other penetrations between the contaminated work areas and uncontaminated areas, shall be sealed with plastic sheeting with a minimum thickness of 6 mil.

The Contractor shall pre-clean all movable objects identified as contaminated by the contracting officer or his representative within the work area using a HEPA filtered vacuum and wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and stored in a protected area.

The Contractor shall pre-clean all surfaces in the work area using HEPA filtered vacuums and/or wet cleaning methods as appropriate. Methods that would raise dust such as dry sweeping or vacuuming with equipment not equipped with HEPA filters is prohibited. Careful attention shall be paid to machinery or areas behind grilles and gratings.

The Contractor shall not remove or otherwise disturb asbestos containing building materials during the pre-cleaning phase.

3.2.2 Work Area(s)

The Contractor shall inform other Contractor employers, on the site of the abatement work, of the nature of the Contractor's work with ACM and/or PACM, of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such other Contractor employers are not exposed to asbestos in accordance with 29 CFR 1926.

The Contractor shall use engineering controls and work practice methods in accordance with 29 CFR 1926. Daily site inspection logs shall be posted at the jobsite by the on-site competent person.

The Contractor shall use flame resistant, 6 mil polyethylene when constructing Negative Pressure Enclosures (NPE) or decontamination areas.

3.3 WASTE LOAD-OUT UNIT

A waste load-out unit shall be established to provide for interim secure storage. The waste load-out unit shall include an equipment room for storage of asbestos-contaminated items (drums, tools, equipment). All equipment and waste containers must be decontaminated prior to being taken out of the work area(s).

All asbestos-containing waste material shall be sealed in leak-tight disposal containers. All waste shall be thoroughly wetted within the disposal containers.

The Contractor shall maintain proper labeling protocols and shall keep a running and final inventory of all filled disposal containers.

3.4 SIGNS AND MARKINGS

Signs shall be posted prior to asbestos work as required in 29 CFR 1926. These signs shall be posted near the perimeter of the asbestos work areas, along the route of the temporary waste material holding (Drum Staging) area, around the perimeter of the temporary holding area, and at all entrances to areas containing asbestos fibers. Signs shall be conspicuous and legible.

Telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, and hospital, shall be posted at a designated telephone located near the regulated area.

One copy of all permits shall be posted at the work site perimeter in a accessible location outside the regulated area.

One copy of the Abatement Contractors current license shall be posted at the work site perimeter in a accessible location outside the regulated area.

One copy of the completed Pre-Work Inspection form (KSC Form 32-96) shall be posted at the work site perimeter in a accessible location outside the regulated area.

3.5 NEGATIVE AIR SYSTEM

The Contractor shall construct Negative Pressure Enclosures (NPE's) as required by 29 CFR 1926.

Each of the negative air units shall be ducted through the containment barrier walls to the outside of the work area(s). When the building is occupied, the ducts shall exhaust into the outside air. Otherwise, they

may exhaust into an area of the building beyond the critical barriers. The units shall never be exhausted into the work area(s).

Each unit must have temporary back-up electrical power (120 Volt AC) in the event of power failures or outages.

3.5.1 Testing

The negative air system shall be designed to provide a minimum of four (4) air changes per hour and shall be tested before any work is begun. After the work area has been prepared, the decontamination unit set up, and the negative air units(s) installed, the system shall be tested by the Contractor. Prior to beginning abatement activities, a pre-work inspection and test shall be conducted by the Contracting Officer or his representative to verify the adequacy of the containment system. Once activated, the negative air exhaust unit(s) shall remain in operation until final clearance air monitoring has been performed and the Contracting Officer has approved their shutdown/removal.

The Contractor shall install a differential pressure meter or manometer to continuously measure pressure differential between inside and outside the work area for all Class I activities which utilize a NPE. A minimum pressure differential of - 0.02 inches 0.5 millimeter of water shall be maintained.

3.6 RESPIRATORY PROTECTION

All personnel engaged in the asbestos removal work in the Work Area shall at all times wear respirators in accordance with 29 CFR 1926. The Contractor shall instruct and train each worker involved in asbestos abatement in proper respirator use, and shall require that each worker in the work area always wear a respirator from the start of any operation which may cause airborne asbestos fibers until the Work Area is released for re-occupancy. All respirators shall be fitted by approved qualitative or quantitative test. Use respiratory protection appropriate for the fiber level encountered in the Work Area and as specified herein, or as required for other situations encountered.

3.6.1 Air Quality for Supplied Air Respiratory Systems

The Contractor shall provide air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds CGA G-7.1, standards for Grade D air.

3.7 REMOVAL OF ASBESTOS

The Contractor shall use engineering controls and work practices for all operations in accordance with 29 CFR 1926 Methods of Compliance for Class I, II, III, or IV asbestos work.

All Class I and II work shall be supervised by an on site Competent Person at all times that work is in progress. All class III and IV work shall be supervised by a Competent Person.

Following removal of contaminated items and asbestos material, the Contractor shall seal the edges of adjacent surfaces, which were exposed when asbestos was removed, with an asbestos bridging sealant/encapsulant.

3.8 DAILY HOUSEKEEPING

The Contractor shall maintain a clean work area in accordance with 29 CFR 1926. The Contractor shall performing the following housekeeping functions at the end of each shift or prior to leaving the work site unattended:

a. Prepare contaminated waste for disposal by packaging the waste and removing it from the work area.

b. HEPA vacuum the work area.

c. Visually inspect polyethylene in the work area and other high traffic areas.

3.9 CLEANING PROCEDURES

The Contractor shall clean the work area at the end of each day's abatement activities. A separate, secured area within the work area shall be designated for storage of debris until it can be properly disposed. The work area shall be secured after termination of the work day to prevent entry. Disposable supplies, such as mop heads, sponges, and rags shall be replaced regularly and properly disposed of. All equipment shall be cleaned by HEPA vacuuming and wet wiping.

Work areas in which abatement operations have been completed, shall be cleaned, starting at the ceiling and working down to the floors, by HEPA vacuuming and wet wiping. Upon satisfactory final clearance air sampling, and removal of polyethylene sheeting has been completed, a final cleaning (wet wipe) of all surfaces within the work area shall performed by the Contractor prior to removal of worksite access controls and re-occupancy inspection by the Government.

3.10 INSPECTION

The Contractor shall not commence removal of asbestos materials prior to satisfactory completion of the pre-work inspection. For all Class I asbestos work the Contractor shall post a copy of the completed pre-work inspection form (KSC FORM 32-96) at the jobsite.

3.10.1 INITIAL INSPECTION

The Contractor and the Government shall conduct a walk-through of the work area prior to beginning the abatement work to review existing conditions and ensure safe and practical conditions for the work to be implemented. Any damage to structures, surfaces, and equipment, which could be misconstrued as damage resulting from work shall be documented by the Contractor and submitted to the contracting officer at least one day prior to start of work.

Background samples shall be taken for work areas in accordance with 29

CFR 1926 prior to beginning the abatement work.

3.10.2 DAILY INSPECTION

Contractor shall maintain an access log of all personnel who enter the regulated work area. Through continuous surveillance and inspections of the worksite the Contractor shall ensure the integrity of containment, proper function of the negative pressure system, and posting of signs and labels. The Contractor shall also ensure, through frequent inspections during each work shift, that negative pressure is maintained, appropriate work practices are followed, appropriate protective clothing and equipment are used, and worker decontamination procedures are being followed.

The Contractor shall ensure that critical barriers and negative pressure enclosures remain effectively sealed and taped. The Contractor shall take immediate action to remedy defects immediately upon discovery. Details of the inspections are to be included in the Contractor's daily inspection log and posted in an accessible location outside the regulated area.

The Contractor shall provide updated copies of the Air Monitor Report Entry Logs, Daily Site Inspection Logs and Waste Drum Inventory to the Government at the end of each week of the abatement work.

NASA/Kennedy Space Center reserves the right to conduct periodic inspections and air monitoring in the work area(s). If the work area is unsafe as determined by the contracting officer, NASA/Kennedy Space Center will require the Contractor to stop work until the unsafe conditions are corrected.

3.10.3 FINAL INSPECTION

The thoroughness of asbestos removal shall be evaluated by visually inspecting the affected surfaces for residual asbestos material and accumulated dust and by air sampling. There shall be no evidence of residual asbestos or asbestos debris on any adjacent surfaces upon completion of the work.

Upon completion of the work, a thorough visual inspection of the work area will be conducted by the Government and the Contractor to make certain there are no signs of residual asbestos material and accumulated dust. The final visual inspection shall be in accordance with ASTM E 1368. Final inspections shall be documented on KSC FORM 32-95 provided by the Government inspector.

Final aggressive air sampling shall be performed by the Government for each NPE work area after completion of a satisfactory visual inspection. The clearance criteria is 0.01 fibers per cubic centimeter (f/cc) of air as determined by PCM. Satisfactory fiber counts from all final samples shall be less than 0.01 f/cc. If any of the final air samples contain greater than 0.01 f/cc the Contractor shall repeat the final cleaning operation and the area re-tested until satisfactory clearance levels can be obtained.

Five (5) PCM final air samples shall be collected for the first 5,000 square feet of containment plus one (1) additional PCM final air sample for

each additional 5,000 square feet or one (1) air sample per room, whichever is greater. The number of final air samples may be reduced for small enclosures of less than approximately 2500 square feet. In no case may fewer than two (2) final samples be collected for any enclosure.

Clearance air sample volumes shall meet the minimum volumes as indicated for analysis by NIOSH 94-113, Method 7400.

3.11 ASBESTOS WASTE AND CONTAMINATED MATERIALS

3.11.1 Removal of Asbestos Waste Materials

For purposes of this paragraph, asbestos waste materials shall be defined as those materials which contain or have been contaminated by asbestos and are not planned to be encapsulated and remain at the job site. They are primarily removed asbestos, disposable clothing and safety equipment, masking sheets, contaminated amended water, vacuum cleaner contents and filters.

Asbestos waste material shall be contained in two 6-mil polyethylene disposal bags, or two 6-mil disposal bags and a sealed leak-tight container such as but not limited to a steel or fiberboard drum. The asbestos waste material shall be packed while still wet. The external surface of the waste containers shall be cleaned by HEPA vacuuming and wet wiping before moving from the work area. Protect interior of truck or dumpster with two layers of polyethylene sheeting.

All disposal containers, dumpsters, and trucks, including the inside bags must be labeled and marked in accordance with 40 CFR 61, 29 CFR 1910 of OSHA's Hazard Communications Standard, and 49 CFR 171 and 49 CFR 172, Hazardous Substances.

The labels must be conspicuous and legible and shall be affixed to plastic bags and drums indicating the name of the waste generator and the location (facility name & number) where the waste was generated.

A waste shipment record (WSR) shall also be provided to the waste site owner in accordance with the instructions in "Figure 4" of 40 CFR 61.

3.11.2 WORK AREA DISPOSAL

After final inspection has been completed and the work area is released for occupancy, the Negative Air System units shall be shut off and removed. All entrances and exits shall be unsealed and the plastic sheeting, tape, and any other trash and debris, except for critical barriers, shall be disposed of in sealable plastic bags, or disposed of in drums and moved to the staging area. After final wet wipe of the work area and satisfactory clearance air sampling, critical barriers and the decontamination unit shall be dismantled.

3.11.3 DECONTAMINATION AREA AND SUPPORT AREA DISPOSAL

The decontamination area shall be dismantled after the work area is released by the Contracting Officer for re-occupancy. Vacuum all surfaces

of the decontamination unit before it is disassembled.

3.12 WASTE TRANSPORTATION AND DISPOSAL

The Contractor shall transport and dispose of asbestos waste in full compliance with 40 CFR 61, SUBPART A, 49 CFR 171 and 49 CFR 172.

3.13 ASBESTOS ABATEMENT NOTICE AND CHECKLIST

A Pre-Work Inspection form (KSC Form 32-96) and a Clearance Inspection form (KSC Form 32-95) will be provided by the Government inspector to the Contracting Officer upon satisfactory completion of the work. The completed forms shall be used to establish approval of the containment, work practices and final acceptance/re-occupancy of the work area(s).

3.14 FINAL ACCEPTANCE

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NOTE: NASA Section 01700, "Contract Closeout," should be reviewed and revised to meet any required performance by the Contractor before the project is considered complete.

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The work shall not be considered complete until the asbestos materials identified herein have been abated, the areas cleaned, satisfactory clearance air monitoring completed, all asbestos contaminated waste has been properly disposed of, and all project close out documents have been received by the Contracting Officer.

-- End of Section --